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The Sustainable City: Conceptualisation, Planning and Technology

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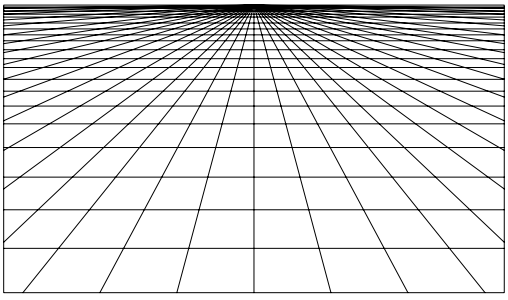

ESST
The European Inter-University Association on
Society, Science and Technology

The ESST MA

Contents

Preface

Before I came to Maastricht, I had spent one semester at the University of Oslo, ESST. Here I studied general topics within the field of Society, Technology and Science (STS). On the agenda were lectures, seminars, essay writing, student presentations and one substantial project that ended up with a report. This gave me the insights, and the inspiration to write this thesis, which is the major part of the ESST MA. I started to work on this thesis in February 2001 as a trainee at the International Centre for Integrative Studies (ICIS) in Maastricht. I did most of the work on my thesis at ICIS, were I stayed for 7 months. Simultaneously, I followed the lectures and seminars on Technological Culture at the University of Maastricht.

During my work on this thesis, I have received a lot of important ideas from the ICIS people in Maastricht. My thanks goes to ICIS, and in particular I want to thank Dale Rothman, my supervisor who gave me crucial feedback both during my stay in Maastricht and after I came back to Norway. Also, I want to thank students and lecturers at the University of Maastricht, Faculty of Arts and Culture.

Synopsis

The creation of sustainable cities is believed to solve all our urban problems, whether the problems are environmentally, socially or economically. ‘Sustainable cities’ have gained widespread scientific and political consensus, and organisations such as the United Nations, the European Union, NGOs and other political agencies have worked out concepts and plans for the development and implementation of it. These plans are manifested in reports and other policy documents that address decision-makers and the general public to follow suggestions for action. Central features in these plans are how sustainable cities are to be understood, what sort of problems cities face and how to cope with these. In particularly, city planning and technology have a crucial role to

play in the achievement of sustainable cities. This thesis seeks to investigate whether the idea and the conceptualisation of the sustainable city is presented different by different agencies. Here, why similarities and differences exist are to be explained and accounted for. Furthermore, a special focus is put upon how city planning and technology are to solve urban problems, and whether these solutions and the idea of the sustainable city vary between different documents represented by agencies on different geographic scales. In order to address the scale issue, three documents are selected for closer investigation: the Habitat Agenda 2 of the United nations, the Sustainable Cities Report of the European Union, and Creating a Sustainable London, written by London Sustainable Trust.

Analysing the sustainable city as represented by different agencies pose questions with regard to the method that is to be applied. The method applied in this thesis, is a discourse analysis of these documents within the framework of actor-network theory. According to this theory, texts (actants) can make it possible for the authors (actors) to achieve power. Furthermore, the texts can function as instruments to build up and stabilise networks in order to strengthen and stabilise theories and ideas.

It is argued that the idea of the sustainable city is presented in such a way that it is impossible to resist. This is made possible by work of the authors who mobilise scientific articles, political conferences and other entities to support their claims. Furthermore, the ‘sustainable city’ functions a symbolic umbrella; hence actors with often contradicting interests can support the idea. The ‘sustainable city’ thus becomes an adaptive concept that is used by many actors, on different geographic scales. These scales are also produced and reproduced by the work done by actors in heterogeneous networks.

For city planning, it is found that empowerment, bottom-up and participatory planning are emphasised together with the importance of experts and scientific

planners, who are to manage the urban environment. Here we see that modern and post-modern concepts on planning and development are used in chorus. As for technology, we face a technological paradox: the authors of the document point out sustainable technologies as main instruments of creating sustainable cities while at the same time identifying environmentally adverse technologies as the main cause of unsustainable cities.

Keywords: sustainable city, planning, technology discourse analysis, and actor-network theory.

1. Sustainable Development and the City

1.1. A new development paradigm: sustainable development.

City development, urbanisation, and their impacts on the environment and living conditions have long been major subjects, especially in geographical and urban anthropological studies on the urban environment. But it was not until the 1990s that scholarly literature and policy reports on "sustainable cities" emerged. This discourse can be seen as a response to the political agenda highlighted at the United Nations Conference on Environment and Development in Rio de Janeiro from 3 to 14 of June 1992, popularly known as the Earth Summit. Agenda 21 was the main document signed at the conference, it was envisaged as a "work plan", but not a legally binding document. Influenced by politically powerful reports like Limits to Growth[1], Blueprint for Survival[2], and Our Common Future[3], the Rio Conference called for a new development policy, which was compatible with sustainable development as defined by the Brundtland Commission in Our Common Future:*"…development that meets the needs of the present without compromising the ability of future generations to meet their own needs."* [4] 179 countries supported its recommendations.

By this new development paradigm (using Kuhnian terminology[5]), "sustainable development" was manifested in the Rio Declaration on Environment and Development. Not only has it gained widespread cultural and political recognition,

[1] Meadows D.H., Meadows D.L., Randers J., Behrens W (1972)
[2] Meadows et al. (1972), the Ecologist
[3] WECD (1987)
[4] WECD (1987), p. 43
[5] Kuhn T.S (1962)

but also significant theoretical acceptance among many economists and environmental scientists.[6]

From 3 to 14 June 1996 the United Nations Conference on Human Settlements took place in Istanbul. This Habitat Agenda 2 sought to integrate the outcomes of the Rio Conference by endorsing and promoting (among other goals) sustainable settlements.[7] The same year, the Sustainable Cities Report was published by the Expert Group on the Urban Environment in order to promote sustainable cities within the European Union (EU).[8] Also in 1996, the Sustainable London Trust (SLT) published Creating a Sustainable London.[9] All were concerned with creating sustainable cities. These data are the main sources of information in this thesis.

For the purposes of this thesis I will accept sustainable development as a general policy vision. It functions as a symbolic umbrella that covers several development theories, containing often contrasting theories regarding cultural, social, economical and environmental development, and several approaches of how to deal with these. Thus, sustainable development can be seen as an established grand policy narrative, which can be defined as:

"…stories (scenarios and arguments) which underwrite and stabilize the assumptions for policymaking in situations that persist with many unknowns, a high degree of interdependence, and little, if any, agreement."[10]

In order to analyse such a narrative, Maarten A. Hajer suggests it can be useful to apply discourse reading.[11] This implies understanding the discourse not as the product

[6] Campagni, R., Capello, R., Nijkamp, P: Managing Sustainable Environments. In Paddison, R (2001), page 127

[7] UN (1996)
[8] Expert Group on the Urban Environment (1996)
[9] Sustainable London Trust (1996)
[10] Roe E (1994), page 16

of linear, progressive, and value-free process of convincing the different groups, but rather, as a struggle of various political coalitions, each made up of actors such as scientists, politicians, activists, or organisations representing such actors.

It is important to emphasise the relative notion of the concept of sustainable development (and hence the sustainable city). Sustainable development as defined by the WCED is a highly political concept, developed and accepted within the frame of the UN. It presents the environmental case in such a way that it can gain support from institutions like the World Bank and the IMF.[12] Thus, it is important to acknowledge that sustainable development is not a neutral concept, but is influenced by factors such as prominent scientists, governmental institutions, politicians, monetary institutions, NGOs, environmental movements, and physical (environmental) conditions. As suggested here in order escape the taken-for-granted-world, one must be able to analyse how concepts can change meaning from context to context, or on the contrary; how concepts can reach widespread consensus.

1.2. Defining the city.

This thesis is specifically concerned with sustainable cities, and how sustainability should be promoted in the urban space, as reflected in selected reports. For this purpose, the term 'city' will be used in the broadest sense, encompassing human settlements where population size is large enough, economic function, social organisation and other factors resemble certain elements of urbanity. The concept of 'urban' is taken from William H. Frey and Zachary Zimmer.[13] They argue that there are three elements which distinguish urban and rural: 1) an ecological element such as population size and density, 2) an economic element which considers the economic

[11] Hajer M.A. (1995), Pp. 2-43

[12] Hajer, M.A (1995)
[13] Frey, W.H., Zimmer, Z: Defining the City. In Paddison, R. (2001)

function of the urban area and the activities that take place there, and 3) the character of social organisation, behaviours, values and perspectives of the world.

The language of the “sustainable city”, is a notion that is comparable to other approaches referring to similar themes: garden cities, healthy cities, learning cities, green cities, clean cities and eco-cities. The idea of the “sustainable city” is investigated because of the apparently existing consensus it represents in science and politics.

1.3. Notions of the sustainable city in the scholarly literature.

In order to give the reader an impression of what different aspects the concept of the 'sustainable city' contains, and why some say we need sustainable cities, an account of the sustainable city debate from the scholarly literature follows here. This describes the common problems cities face in the 21st century and which solutions are needed as represented by some selected writers in the field: Gerrit H. Vonkeman, Herbert Girardet, Robert Campagni, Roberta Capello and Peter Nijkamp. Later on, the approaches of these authors will be drawn upon in the analysis in chapter four.

1.3.1. Sustainable development, from the global to the local level.

Gerrit H Vonkeman accepts the political dimensions of sustainable development, and recognises the relative notion of the concept. However, he claims that sustainable development as defined by the UN offers very little room for different interpretations. Furthermore, he argues that while politicians and decision-makers may have understood its full implications, they have shied away from its social, political and institutional consequences.[14]

Vonkeman identifies the technosphere as the fundamental source of global environmental problems. Man developed tools and agriculture and created human settlements, which grew into villages and towns where science and technology was developed. This technosphere did not propose any serious problem until its scale began to become a threat to the natural processes and systems. It began to reduce the physical space where natural cycles and equilibrium could take place, extracted fossil energy carriers from the geosphere, and emitted waste of substances into the

[14] Vonkeman, G.H (2000), pp. 1-37

biosphere. Furthermore, science and technology improved living conditions in such a way that the world population increased. Operating in a capitalistic economic system, growth and consumption become characteristic of society, incompatible with a natural system based on dynamic equilibrium.

Based on these fundamental problems, he concludes that we have to transform our societies into sustainable systems, which recognise inter-generational and intra-generational solidarity as the Rio declaration propose. In order to deal with the problems the technosphere causes, Vonkeman offers a four-phase planning methodology for achieving regional sustainability.[15] During the first phase, experts (scientific personnel) need to introduce the aims of sustainable development and the nature of its criteria to stakeholders in the region. The meaning of sustainable development has to be defined with a high degree of participation and consensus seeking. Planning experts must propose sustainability indicators, open to discussion among the stakeholders. The second phase involves the development of a vision, an implementation strategy and a programme, where the responsibilities of the stakeholders are determined. This is followed by a third phase, which involves the elaboration of an operational strategy and actions to meet the targets. In the final phase, the draft sustainability plan is presented and discussed, aiming to reach consensus on the plan and the implementation of it. The planning experts have to assure a process of continuous improvement by providing a regional management system.

Vonkeman calls for more efficient technologies regarding the pressure on natural resources, and at the same time decreasing the consumption of resources and energy. Due to certain cultural barriers to sustainable development, cultural change may first be necessary to implement such technological development. A sustainable lifestyle must be promoted, one that does not link with prosperity, wealth, happiness and status

[15] Vonkeman, G.H (2000), pp.101-142

to material wealth and consumption. One important tool to achieve this is the political declaration made at the Rio conference in Agenda 21, 1992. Despite progress on various fronts like policymaking, science and research, he claims that significant environmental problems remain *"deeply embedded in the socioeconomic fabric of all nations"*.[16]

1.3.2. Creating the sustainable city.

Herbert Girardet writes that:

"The cities of the 21st Century are where human destiny will be played out, and where the future of the biosphere will be determined. There will be no sustainable world without sustainable cities." [17]

This statement sets the city as the most important factor in creating sustainable development. He argues that global economic growth is closely associated with urbanisation, and that the city is the main engine for economic growth. Large cities have negative effects on the environment; they are the main environmental pollutants in the world. Applying the ecological footprint approach[18] to the city of London, Girardet finds that each Londoner has a footprint of some three hectares.[19] He claims that if the figures in London, and Europe in general were to be applied globally, we would need two planets.

The solution for Girardet is in creating sustainable cities, which are constructed in such a way that clean water, air, food, housing, education, health, labour and equality

[16] Vonkeman, G.H (2000), page 37
[17] Girardet, H (1999), Page 9
[18] Wackernagel, M., Rees, W (1996)
[19] Girardet, H (1999), pp. 28-29

are provided without damaging the environment. Accordingly, a sustainable city can be defined as:

"…organised so as to enable all citizens to meet their own needs and to enhance their well-being without damaging the natural world or endangering the living conditions of other people, now or in the future." [20]

He argues that even if modern cities were to dramatically reduce their consumption of resources and energy, they would still prosper. Improving the resource productivity of individual consumption patterns, as well as that of urban system as a whole could do this. Instruments such as waste recycling, improving urban buildings by using new materials and architecture, new approaches to transport planning, and the use of urban space can be used. In order to reduce the ecological footprint of cities, urban metabolism, the flow of resources and products through the urban system for the benefit of urban populations, must be improved. Nature's own metabolism has an essentially circular metabolism, while the city has a linear metabolism where resources are being pumped through the urban system without much concern about the resulting waste products.[21]

Local agenda 21, initiated by Agenda 21, is seen as the main vehicle to achieve sustainable development in human settlements. The majority of the world's local authorities have initiated Local Agenda 21 programmes, but Girardet argues that, while many useful things have been said, very little has been done to implement them. He claims that the Agenda 21 project cannot be successful without active participation of the general public, politicians, and civic leaders and of the world of business. Furthermore, he calls for a culture of sustainability, where the cultural values underpinning our cities must be changed.

[20] Girardet, H (1999), page 13
[21] Girardet, H (1999), pp. 32-46

1.3.3. Managing sustainable environments.

Roberto Campagni, Roberta Capello and Peter Nijkamp propose that the sustainable city must be based on a weak definition of sustainability.[22] (As opposed to weak sustainability, Krishna Rao Pinninti claims that strong sustainability refers to maintaining both every component of natural capital and human made capital. Weak sustainability can refer to maintaining total capital intact, without regard to the composition of that capital [23]). They claim that the city was born in direct opposition to the countryside. As a growing artefact it was designed to attain social goals such as human interaction, agglomeration of economies, and cultural knowledge processes. Therefore theoretical tools developed for natural resource management cannot be transferred to understand and regulate an increasingly non-natural urban environment. In terms of usual concepts developed in the case of natural resources; the city is by definition unsustainable, and therefore "strong" sustainability principles are almost meaningless in an urban environment. Campagni et al maintain that a city in ecological equilibrium is not a useful concept. Rather, they suggest that urban sustainability should incorporate supplying agglomeration of economies, dynamic proximity advantages, welfare, internal social interaction, proper accessibility to the external world and economies of scale in energy consumption.[24] The three subsystems that constitutes the city, the economic, the social and the physical (natural and built) environments should be analysed in an integrated manner. Unlimited and chaotic growth in the city that happens in the process of rapid economic growth and industrialisation is a challenge to the sustainable city. But this process can be handled if good management of the city and professional organisation of urban space are

[22] Campagni et al: *Managing Sustainable Environments*. In Paddison, R. (2001), page 128
[23] Rao, P.K (2000), pp. 69-90
[24] Campagni et al: *Manging Sustainable Environments*. In Paddison, R. (2001), page 128

implemented. A major hindrance to such a process is inefficient bureaucratic procedures, which fail to exploit the potential embodied in the modern city.

There must be an early response to environmentally adverse technological and territorial trajectories from a relevant public body. Once a trajectory gets started, the costs of changing it are huge. Path dependency might "lock in" the system. Urban governance has to be driven by clear and professional principles. Campagni, et al call for the implementation of more market-based development principles and long range public infrastructure provision, which ensure urban sustainability in terms of social, economic, and environmental benefits for all actors in the urban space. For example, in the case of emissions they argue that the utilisation of the urban space and the rights to use it may be based on fair market principles (for example tradable permits), which should serve the need for all citizens. They claim that in a perfect market, the permits would be traded until the marginal abatement costs of all actors are equal to the market price of the emission permits. Such a system offers more certainty and flexibility than other policy systems.

1.3.4. Integrated Assessment.

Cites can be seen as the motors for sustainable development of European regions. Jan Rotmans, Marjolein van Asselt and Pier Vellinga stating that the term sustainable city is value-loaded and thus multi-interpretable. They characterises a sustainable city as a: *"…more balanced development of the social-cultural, economic and environmental domains of a city and its surroundings"* [25].

[25] Rotmans, J., van Asselt, M., Vellinga. P (1999), page 5

Regarding the future of Europe, the development of cities constitutes one of the most important driving forces since about 80 % of Europe's population live in cities. In this context, it is crucial to be able to monitor city contribution to sustainable development. In the integrated approach, the economic, ecological and the institutional development of a city are interwoven. A sustainable city can be managed if proper planning tools are developed, and if a diversity of the stakeholders participate in the process. A city-planning instrument can estimate the choices in city policy making that might be made, playing a facilitating role. They advocate using an integrated systems approach, which considers the city as a system of interrelated stocks and flows. These flows consist of economic stocks, social-cultural stocks and ecological stocks, and are to be analysed in an integrated and cross-disciplinary manner. Key issues such as transport, water, waste, food, information and communication must be addressed from an integrated viewpoint.

1.3.5. Summary

There is scientific consensus that cities and the different processes that take place in the urban space cause problems for the natural environment and social and economical conditions of humans, both locally and globally. This problem is to be solved by creating sustainable cities. The concept of the sustainable city varies whether it should contain a strong or weak sense of sustainability. There is also an agreement that professional and scientific management in the planning process is necessary in order to obtain a sustainable city. It varies however, how one should combine professional expert planning and stakeholder participation. As for more efficient technology, it is agreed that environmental benign technology and certain kinds of technological innovation are needed.

The scholarly discourse on sustainable cities is thus very much concerned about the meaning of what a sustainable city is (or what it should mean), and what actions one should undertake to achieve a sustainable city, and how to plan for such actions. But, what is the situation on the political arena? Are governmental institutions concerned with sustainable cities? If they are, how do they approach this issue?

1.4. The research question.

Given this background, the main question to be explored in this thesis is:

Is the idea and the conceptualisation of the sustainable city represented differently in reports by different agencies? Why, why not? What are the problems they identify and the solutions they propose regarding city planning and sustainable technologies? Do these change across different geographic scales?

In order to address this question, a series of interrelated reports are examined. These will be compared and contrasted by examining the idea of the sustainable city as it is represented. All the selected reports are linked politically with the Agenda 21 protocol. I will look upon the common themes (and differences) regarding the problems identified and the solutions proposed. Three different geographical scales (here meaning different levels of representation) are examined. On the global scale, I have selected to investigate the Habitat Agenda[26] of Istanbul, and parts written in the Agenda 21 protocol about human settlements, planning and technology. The Expert Group on the urban Environment of the EU, which has published the Sustainable Cities Report,[27] represents the regional scale. As for the local scale, the Sustainable London Trust Projects are explored, where Creating a Sustainable London[28] by the

[26] UN. The Habitat Agenda (1996)
[27] Expert Group on the Urban Environment (1996)
[28] SLT (1996) Creating a Sustainable London

Sustainable London Trust, and other related case studies are published as a part of the London 21 Organisation.

These reports will be compared regarding their construction of the sustainable city, and also analysed as to whether these constructions change across scale. The scale issue is interesting, since the idea of sustainable development as described by Agenda 21 is supposed to be implemented through actions on different scales, with the local scale pointed out as the most important. The idea of the sustainable city, and the means to achieve it may differ between those scales. If so, this might also have an influence on what sort of approaches that should be used, and actions that ought to be undertaken. On the other hand, if there are similar definitions and approaches on all geographic scales (UN-EU-city) to reach sustainability, this should also be accounted for.

Finding what these approaches are about should not be that difficult, since suggested actions based on ideas of policy visions are explicit written in the text. However, finding out *why* those approaches gain consensus is a harder task. Here I will explore whether the actor network translation model can contribute to achieving a better understanding of the different conceptualisations that take place.[29] Bruno Latour maintains that theories, scientific facts, and machines are negotiated between human and non-human actors. Furthermore, theories, facts and machines are transformed during translation in actor-networks.[30] He argues that there is no such thing as scales, rather there are just smaller, or longer and more extensively connected networks.

My research question regarding the scale issue may thus look like a serious contradiction compared to the translation model applied to investigate it. My intention is to test if Latour's translation model can contribute to a better understanding of the

[29] Latour, B (1987)
[30] Latour, B (1987) pp. 103-144

processes that take place in the sustainable city discourse. Latour opposes the diffusion model that treats society only as a medium of different resistances through which ideas, and machines travel. By discourse analysis within an Actor-Network Theory framework, I will investigate how actors working in networks settle the paradigm of the sustainable city (in city planning). Finally, although the terms 'technology' and 'planning' are used distinctly in this thesis, it is not meant that it is taken for granted that there actually exist any clear difference, or boundary between the two. Here, the terms are used with reference to the way they are understood in the data material.

1.5. The structure of the thesis.

The structure of the thesis is divided into five chapters. After this introduction, an explanation of the theoretical framework and the research method follows in chapter two. There I will also elaborate why I chose to investigate the selected reports. Chapter two will be concerned with how to do a discourse research on the sustainable city discourse, describing its potential for textual exploration. Furthermore, the insights achievable by using research methods proposed by some writers within the field of discourse analyses, and Society, Technology and Science studies (STS) are explored, actor-network theory (ANT) is specifically discussed. In chapter three the data material will be presented. The contents of the reports are examined with a special concern to the idea and the conceptualisation of the sustainable city, approaches to city planning and sustainable technologies. In chapter four the data material will be analysed according to the methodological approach as described in chapter two. The reports will be sifted, compared and contrasted with each other with regard to the idea of the sustainable city. I am particularly interested in the actors involved in the making of the report, for whom it is written, the understanding of the sustainable city, the problems identified, and the solutions proposed. Regarding the answers to the question that is posed, a conclusion is written in chapter five based on

the discourse reading and analysis of the texts. Finally, a proposal for further research is elaborated.

2. Method: Approaching Discourse Analysis

2.1. Introduction.

Mark Boyle and Robert J. Rogerson propose the use of discourse analysis in urban studies.[31] They suggest analysing the policy discourse in order to understand the cultural constructions of the city, within which the city policy-making is embedded. Such a discourse reading focuses less on policy practice; rather it foregrounds the ways of seeing cities assumed in policies and the idea that ways of seeing always derive from an underlying position of power. For the purpose of this thesis, those constructions are seen as constantly open to negotiation, which takes place between different actors, possessing different degrees of power, through their activity in networks. Applying discourse analysis to investigate key sustainable city reports can open and visualise any different cultural constructions of the sustainable city. Furthermore it can be a helpful tool to see if and how these constructions affect the proposed actions to achieve a sustainable city.

In this chapter, it is asked whether actor-network theory (ANT) can contribute to a better understanding of the sustainable city discourse, specifically whether there are different and changing ideas of the sustainable city. For that purpose, an account of discourse and an approach to discourse analysis is needed, followed by an account of ANT. At the end an explanation is presented on how discourse analysis that is inspired by ANT can be applied to the case of the sustainable city discourse.

[31] Boyle, M., Rogerson, R.J: *Power, Discourse and Trajectories.* In Paddison, R (2001), page 414

2.2. Discourse and discourse analysis.

Maarten A Hajer defines discourse as:

"…a specific ensemble of ideas, concepts, and categorizations that is produced, reproduced, and transformed in a particular set of practices and through which meaning is given to physical and social realities."[32]

Of course there are many other definitions of discourse and many ways to approach discourse analysis. In particular there is the realist approach, which assumes that the natural environment that is discussed in environmental politics is the same as the environment "out there". What Hajer proposes, is a constructivist approach of reading (environmental) discourses, in opposition to the realist approach. He claims that the realist assumption fails to recognise that images of reality are dependent on certain discourses being able to express themselves.[33] A similar approach is put forward by Elizabeth Frazer and Nicola Lacey, who, referring to Michel Focault, state that language is not neutral.[34] It does not give an objective and passive mirroring of reality. They claim furthermore that certain form of institutionalised language shape the social reality.

The ontological question of what reality is, and the epistemological questions of how we can know have been a debate extensively discussed within philosophy as far back as the Antique in Greece. This debate goes beyond the scope of this thesis. The point is that while analysing discourses, one can get to know the perspectives of what reality is as understood by the different actors. If there are different perspectives, these differences are often visible within a particular discourse. As Fran Tonkiss

[32] Hajer, M.A (1995), page 60
[33] Hajer, M.A (1995), pp. 16-21.
[34] Frazer., E., Lacey, N (1993), page 15.

holds, discourse analysis is not so much about getting the truth of an underlying reality, but to examine the way that language is used to picture the reality.[35]
From this we can say that texts are important regarding the way they influence people's understanding of their reality. Christie W. Mathisen claims that a discourse, which often takes place through texts (among other media), produces and reproduces people's meaning of the world and shapes their identities and attitudes.[36] Accordingly, language as discourse is not a neutral medium, but a domain in which our social world is constructed and organised. As Norman Fairclough defines discourse, it can be understood as the *"…use of language as a form of social practice."*[37]

One can illustrate the relation between text and context is about through discourse analysis. Mathisen claims that: "*…discourse analysis is to analyse texts or the use of language, regarded as social action in its social context."*[38] (My translation). We can thus gain understanding of how people interpret their reality through reading the discourse they produce, distribute and use. We regard and treat real ecological and social problems through specific systems of language, which draw on particular terminologies and specific types of knowledge. Policy documents and reports on sustainable cities draw on various discursive elements from disciplines such as economy, ecology, geography, philosophy, political science, sociology and anthropology. Further, discourses are not independent constructions; rather they are embedded in the day-to-day life, where they produce considerable effects. Discourses are not independent entities that can be studied in isolation from their use, history and the particular network in which they are situated; they do not exist by themselves.

Mathisen claims, in policy making, words are often considered to be less important than real actions. However, while referring to Jerome Bruner[39], Mathisen points out

[35] Tonkiss, F: *Analysing Discourse*. In Researching Society and Culture. In Clive Seale (1998)
[36] Mathisen, W.C (1997)
[37] Fairclough, N (1995), page 7
[38] Mathisen, W.C (1997), page 2
[39] Bruner, J (1990)

that there is no clear-cut difference between what people say and what people do. What we say before or while we do something is to a certain degree a determinant in how action is carried out. We can also conclude that the one who dominates the discourse also has access to means of control, and therefore also the potential to gain power. But how do some actors become dominant in a discourse? And how do they make other actors accept these ideas? Can the meaning of the social and physical reality simply be produced and diffused in the discourse itself? These are questions that will be investigated in order to find whether there are differences or similarities regarding the idea of the sustainable city.

The main focus here is upon selected official documents and reports on sustainable cities and not so much about other sources of information (i.e. television, radio, art, etc.). Regarding the sustainable city discourse, my wish is to see if actors at the various levels have distinctive ideas about what a sustainable city is and, hence, which actions should be taken to achieve such a goal. If there are similar interpretations of the idea of the sustainable city, this also must be explained. Is the answer that the idea of the sustainable city and its implementation simply diffuse over time and through space vigorously because of its own objective inertia? This thesis argues against this assumption. Instead, it is proposed that the idea of the sustainable city is only adopted by cities because of some actors' work and persuasion in networks. In particular, this work is done through texts.

2.3. The model of diffusion.

Geographers have long explained the spread of phenomena in terms of diffusion. The Swedish geographer Torsten Hagerstrand suggested that innovations diffuse as a spatial process. [40] Here, information circulates through a regional system, modulated

[40] Hagerstrand, T (1968)

by physical and individual resistances, which together determine the transformation of the information into innovation.

Bruno Latour opposes the diffusion model. He argues it treats society only as a medium of different resistances through which ideas and machines travel.[41] According to the diffusion model, when a fact is not believed, when an innovation is not taken up, or when a theory is put into a completely different use, the diffusion model simply says, "some groups resist". Latour further maintains that diffusionists simply add passive social groups into the context that slow down the path and movement of ideas and innovations. In such a model, facts, theories, ideas and machines are understood as true, universal, and functional. They have their own inertia and get black boxed in a society consisting of groups with passive interests, who either adopt or ignore them. As a consequence of this, Latour says a distinction is drawn between science and techniques on the one hand, and society on the other. Here, the society is the reason why true and universal facts, theories, ideas, methods and functional machines do not spread. By this, we have not only scientific and technological determinism, where facts spread by their own inertia, but also social, cultural or economical determinism that seeks to explain that science and technology is shaped and determined by all these social factors. Instead of the diffusion model, Latour and other actor-network theorists propose to apply the translation model that is a part of actor network theory (ANT). This approach is also suggested here.

2.4. On Actor-Network Theory.

John Law maintains that representing a theory that talks of representation in terms of translation poses the problem of being a "faithful representative".[42] Thus, talking about "one" ANT is problematic, because the application of the method itself gets

[41] Latour, B (1987), pp 132-144
[42] Law, J (1992)

transformed and changed when applied by different social scientists (actors) in different studies. However, in ANT there are some specific features that are common to how ANT-scholars approach their research.

Scholars such as Bruno Latour, Michel Callon, John Law and Ariel Rip (among others) represent ANT. ANT is concerned with explaining how scientific disputes become closed, how machines become taken up, and how ideas and methods become adopted. These processes are described as closing black boxes, where facts, ideas and machines attain a more stabilised and final state. Both humans and non-humans are part of networks of negotiation, where black boxes are an effect of the work done by of some actors in these networks. A network consists of actors (humans), and actants (non-humans, non-individual entities). *"An actant can literally be anything provided it is granted to be the source of an action."*[43] Actors can work by enrolling and juxtaposing other heterogeneous entities (actors and actants) within networks, such as articles, grants, experts, declarations, conferences etc. Networks are constantly reproduced by: a) problematisation: in which one actor has solutions to propose to other actors, making in the process oneself indispensable to them, b) interessement: bringing new recruits from older networks to join and support the particular network, c) enrolment: defining and distributing the roles in the network by solidifying the new network's identity through pressure, and d) mobilisation: where a maximal number of allies act as a single whole in one place.

According to Latour, ANT aims at accounting for the very essence of societies and natures: *"It does not wish to add social networks to social theory but to rebuild social theory out of networks. It is as much an ontology or a metaphysics, as sociology."*[44]

[43] Latour, B (1997), page 6
[44] Latour, B (1997), page 2

In order to analyse such networks, a general principle that one must treat actors and actants symmetrically is applied. This blurs the distinction between the really social and the really natural and object-centred repertoires.[45]

In this ontology, black boxes (i.e. universal scientific facts) are not the rule, but the exceptions that have to be accounted for. Furthermore, black boxes do not diffuse by their own inertia, rather, they are translated in networks. Here, theories, ideas, and machines 'work' because of work done by some actors.

2.4.1 The model of translation: translation in networks

The way facts, machines and theories are negotiated in this actor-network is called translation. Translation takes place when actors enrol others.

What is given here is an account of how one can apply ANT in order to analyse the translations that take place in the sustainable city discourse, and how this might affect actions proposed. The intention is to explore whether ANT can contribute to a better understanding of any possible differences regarding the idea of the sustainable city as represented at three different geographic scales. If there are no differences, this is also interesting and has to be accounted for. It will be explored whether ANT can provide a framework to explain if and why any differences and similarities take place.

In order to do this; one must abandon the a priori assumption that there actually exist different scales. According to John Law, if we want to understand the mechanics of power and organisation it is important not to start assuming whatever we wish to

[45] Callon, M., Latour, B: *Don't Throw the Baby Out with the Bath School! A Reply to Collins and Yearley.* Pp. 343-368. In Pickering, A (1992)

explain.[46] He proposes that we should start with a clean slate, assuming that interaction is all there is, refusing any analytical distinctions between the macro and the microsocial.[47] Latour also proposes a similar solution, saying that everything happens locally, in networks.

Latour suggests we can dissolve the micro-macro distinction that has "plagued social theory from its inception."[48] Society does not have a top and a bottom. The metaphor of scales is replaced by the metaphor of connections, a network that is connected by nodes such as actors and actants. An actant could be a scientific fact, a theory, a machine, an ideology or a text document. These actors and actants are to be analysed as a part of a network, both in themselves and how they are connected to each other.

In this ontology, discursive power is an effect, not a cause, of the many negotiations that take place in a network. Likewise, the construction of different scales is also an outcome of this network negotiation, not a cause. That is why ANT suggests that the notion of network is a good analytical tool to use in order to follow the change of the adoption of machines, theories and ideas across scale, between the local and the global. To sum up in a short sentence, Law states that: *"All phenomena are the effect of heterogeneous networks."* [49]

2.5. Discourse analysis and ANT.

If discourse power is an outcome of network translation (with negotiation between actors and actants), and not a cause, one must try to explain how texts and words travel and are translated in networks. Further, how do networks become stronger, longer and more intensely connected through the nodes of actors and actants who

[46] Law, J (1992)
[47] This can be seen as an approach similar to that used in proof by contradiction or the standard practice in statistics to assume the opposite of what wants to show as the null hypothesis.
[48] Latour, B (1997), page 4
[49] Law , J (1992), page 4

operate in the discourse. In this way, one extends the traditional understanding of discourse as a method to understand the social (human relations) construction of reality through texts, to also include things (actants) and their role of the construction of reality.

Michel Callon, John Law and Arie Rip claim that:

"…texts make possible the construction of linkages between existing entities and the formation of novel entities and, if persuasive, thereby constitute an important method for attempting to control the environment." [50]

Here, inscriptions are important regarding the construction of an actor-world. Instead of following the actors, we may therefore follow texts. Although Callon et al are mostly occupied with analysing the making of scientific texts, this method also could be relevant for approaching what we call political claims (i.e. creating sustainable cities), which, among other sources, mobilise established scientific facts to favour its claim.

When ideas in texts become more stable through network negotiation, ANT suggests that some actors have been able to successfully pass their claims to others. In translation, an actor's creation of a problem (problematisation), and imposition of it upon other actors and actants can do this. The success of a text is dependent upon whether the authors have managed to enrol others as defining and distributing roles in the actor world, a world of entities generated by an actor-network. The authors define roles, and distribute those to other actors and actants. If the authors of a text have successfully enrolled their interests to other actors and actants, they have extended the network, and at the same time, made this network more stable. But this is not to say

[50] Callon, M., Law, J., Rip, A: *How to Study the Force of Science*. In Callon, Law and Rip (eds.), (1986), page 11

that it is stabilised forever. A network may collapse whenever actors and actants refuse to be a part of it, or when the translation centres (the “obligatory passage-point”) can no longer hold the other elements together.

According to ANT, a network becoming more and more stable is the exception rather than the rule. For Latour, it is such exceptional circumstances that have to be accounted for. While the constructivist approach of reading discourse limits itself to the social (human relations) construction of meaning, the approach of reading the discourse suggested here also extends to being occupied with actors and actants in the actor world, who play a crucial role in the development of a discourse. Although non-humans do not have the same way of acting as humans have, humans have no preferential claim to agency. Thus, their activities must be analysed symmetrically with those of non-humans.

2.6. The sustainable city: actors, actants, discursive power and suggestions for action.

Based on an actor-network theory and a theoretical fundament on how to understand discourse and discourse analysis, I propose here to use an actor-network approach to analyse how and why the sustainability discourses take place. Text authors, text supporters (i.e. scientists, politicians, articles), text products, the actors described in the texts, technologies and text distributors are all part of an actor-network. There might be several discourse networks in the sustainable city discourse, or simply one network. I will explore if it is possible to detect a network, and whether there are differences and similarities regarding the: a) actors involved in the discourse b) concept of the sustainable city, c) problems identified and d) solutions proposed, with special attention paid to ideas about city planning and sustainable technologies. If there are no differences, but just simply one perspective that is (apparently) black boxed, this also has to be accounted for.

I will investigate whether the idea and the conceptualisation of the sustainable city is translated within a network (the actors in the discourse) through the approach of discourse reading as described above. This experiment can be described as an exploration of reading discourse within an ANT framework.

3. The Sustainable City

3.1. Background.

In 1992, in Rio de Janeiro, the document of Agenda 21 was negotiated and agreed upon by political leaders from 179 countries. Also, representatives of the UN, countries, private organisations, business, indigenous people and other groups participated. According to Agenda 21, humanity stands at a defining moment in history. Agenda 21 claims that disparities between nations, poverty, hunger, ill health, illiteracy and the continuing deterioration of ecosystems are problems that need to be solved. Furthermore, these problems can only be solved in a global partnership for sustainable development, with a balanced and integrated approach to environment and development. The document aims to prepare the world for the challenges of the next century as it:

"…reflects a global consensus and political commitment at the highest level on development and environment cooperation. Its successful implementation is first and foremost the responsibility of governments."[51]

In chapter 7, Agenda 21 stresses the importance of promoting sustainable human settlements. The consumption patterns of cities in industrialised countries stress the global ecosystem. The situation in developed countries is opposite, human settlements there need more raw material and economic development in order to overcome basic economic and social problems. Facing these problems in urban areas, Agenda 21 calls for a programme that promotes: settlement management, sustainable land use

[51] UNECD (1992) Agenda 21, Chapter 1

planning and management, sustainable land use planning, sustainable energy, transport systems and sustainable construction of industry.

The UN has been concerned about the development in human settlements and cities for a long time (Habitat conference in Vancouver, 1976). The Habitat Agenda 2 (from now on just the Habitat Agenda) was a conference held in Istanbul in 1996. One document that is to be analysed in this thesis was written at that conference. In the Habitat Agenda, the UN seeks to integrate paradigm of sustainable development and the outcomes of the conference in Rio to the Habitat Agenda, on the city level.

Within the European Union, the sustainable city policy vision is seemingly thorough, where comprehensive projects are worked out by numerous organisations. The Sustainable Cities Project started in 1993, launched by the EU. As a part of this, the European Sustainable Cities & Town Campaign (backed by the European Commission DGXI) started in 1994. Its 80 European local authorities committed themselves to the Aalborg Charter[52] and its declaration, promoting sustainable development at the local level. In this way, the Sustainable Cities Project became a part of Local 21 in Europe. In that respect, the Sustainable London Trust, which is part of London 21 Sustainability Network that aims to create a sustainable London, is also a part of Local 21 in Europe.

What follows is a description of how the Habitat Agenda want to improve the quality of human settlements, with a focus upon cities. Special attention is paid to: the actors involved in the making of the document, their conceptualisation of the sustainable city, the problems they identify and the solutions they propose regarding the role of city planning and what they call environmentally sound/sustainable technologies. This process of dividing does not imply that the concept of sustainable cities is independent of, and unrelated to the problems identified. On the contrary, they are

[52] First European Conference on Sustainable Cities & Towns. Aalborg (1994)

intimately related. However, the intention by setting up this divide is to see the different aspects of the sustainable city as described in the report/policy-document more clearly. Similar descriptions will be provided on the Sustainable Cities Report of the EU and on Creating a Sustainable London of the SLT. Later on, in chapter four the data descriptions are juxtaposed according the methodological framework described in chapter two. Also, the data will be compared with the approaches of the scholars within the field of sustainable city matters accounted for in chapter one.

3.2. The Habitat Agenda.

3.2.1. The actors involved.

The authors of the UN habitat Agenda are the heads of State or Government and the official delegations of countries assembled at the United Nations Conference on Human Settlements (Habitat 2) in Istanbul, Turkey from 3 to 14 June 1996. 185 governments have signed the Habitat Agenda. They claim that this conference marks a new era of co-operation, culture and solidarity. Moving into the twenty-first century, they:

"offer a positive vision of sustainable human settlements, a sense of hope for our common future and an exhortation to join a truly worthwhile and engaging challenge, that of building together a world where everyone can live in a safe home with the promise of a decent life of dignity, good health, safety, happiness and hope."[53]

They believe that the full and effective implementation of the Habitat Agenda will require the strengthening of the role and functions of the United Centre for Human

[53] UN (1996), page 15

Settlements. However, the actors who will determine the success or failures in improving the human settlement condition are mostly found at the community level in the public, private and non-profit sectors. Particularly, Local Agenda 21 activities should be used. The Habitat Agenda calls for other actors such as the International Monetary Fund, The World Bank, subregional banks, the Bretton Woods institutions and their structural adjustment programmes, other UN specialised agencies and local governments to mobilise resources, and work towards the vision of the Habitat.

3.2.2. The conceptualisation of the sustainable city.

The Habitat Agenda offers no explicit definition of a sustainable city in this document, however the United Nations Sustainable Cities Programme (SCP), established to put into the practice the concepts and approaches developed, defines it as: *"…a city where achievements in social, economic, and physical development are made to last."*[54]

Furthermore, the Habitat Agenda does contain several statements that together, give an impression of what the concept means. They recognise cities and towns as the centres of civilisation, which generate economic development, social, cultural, spiritual and scientific advancement. In section two it is stated that sustainable development is essential for human settlement development, and gives full consideration to the needs and necessities of achieving economic growth, social development and environmental protection.

In the Istanbul Declaration on Human Settlements, the Heads of State or Government and the delegations of countries assembled at the conference endorsed the universal goal of ensuring adequate shelter for all and making human settlements safer,

[54] UN, The sustainable Cities Programme. http://www.undp.org/un/habitat/scp/info/home.htm

healthier and more liveable, equitable, sustainable and productive. Furthermore, in chapter one they place human beings at the centre of sustainable development, including adequate shelter for all and sustainable human settlements. They declare that humans are entitled to a healthy and productive life in harmony with nature. In that respect, urban settlements hold a promise for human development and for protection of the world's natural resources through their ability to support large numbers of people while limiting their impact on the natural environment.

The Habitat Agenda understands sustainable development of human settlements as a combination of economic development, social development and environmental protection. Full respect must be paid to all human rights and fundamental freedoms, including the right to development. It claims that sustainable development:
"…offers a means of achieving a world of greater stability and peace, built on ethical and spiritual vision." [55]

In chapter four, sustainable urban development requires consideration of the carrying capacity of the entire ecosystem supporting such development, including the prevention and mitigation of adverse environmental impacts occurring outside urban areas. In that regard, the ecological footprint of cities must be reduced.

3.2.3. Problems identified.

In the Declaration, the authors are concerned about the continuing deterioration of conditions of shelter and human settlements at the same time as increasing urbanisation is taking place. This deterioration of conditions has reached crisis proportions. More specifically, they identify problems such as: unsustainable consumption and production patterns; unsustainable population changes (including

[55] UN (1996), Preamble.

structure, distribution and excessive population concentration); homelessness; increasing poverty; unemployment; social exclusion; family instability; inadequate resources; lack of basic infrastructure and services; inadequate planning; insecurity; violence; environmental degradation; and increased vulnerability to disasters. They claim that these problems are exacerbated by inadequate planning, lack of managerial capabilities, investment, and technology.

3.2.4. Solutions proposed.

The purpose for the conference was to focus upon adequate shelter for all and sustainable human settlements in an urbanising world. The solutions proposed for the crisis that is described above are thus numerous improvements in many fields. The Habitat Agenda *"will guide all efforts to turn this vision into reality."*[56]

For city planning in general, the authors hold that decentralised and participatory planning and management are preferred. People must be empowered. Urban settlements, properly planned, hold the promise for human development and the protection of the world's natural resources. They advocate for an integrated urban planning in relation to housing, transport, employment opportunities, environmental conditions and human facilities. Promoting sustainable spatial development patterns are means of achieving this. In order to do so, it is argued that a core of professional staff trained in the area of urban planning (among other fields) must be created. Furthermore, on metropolitan planning and management, it says that the lack of a metropolitan-wide authority co-operation creates difficulties in urban management. Here, regional planning must also be promoted in an integrated manner. However, professional management is not enough. A bottom-up approach to planning is also

[56] UN (1996), Preamble.

needed; participation from the grass root level in human settlements is crucial. They must be included in the policy making process.

As for technology, the Habitat Agenda states in its declaration that one must facilitate capacity building and promote the transfer of appropriate technology and know-how. Science and technology have a crucial role in shaping sustainable human settlements and sustaining the ecosystems they depend upon. They commit themselves to promoting high-energy efficiency and environmentally sound technologies in all countries at the local, national, regional and subregional levels. Chapter four offers a global plan of action for how to facilitate the transfer of environmentally sound technologies as a part of achieving sustainable human settlements. Here, local and regional expertise must be mobilised to promote research and the transfer of technology to support land administration systems.

3.3. The Sustainable Cities Report.

3.3.1. The actors involved.

The European Commission in 1991 established the Expert Group on the Urban Environment, which has written this report. However, they state that any view expressed in the report does not necessarily reflect the views of the European Commission.

The Expert Group is composed of 38 national representatives and independent experts from the EU countries. Inputs in to the preparation of the report have also been received from the Directorates General in the EU. The report is one of the main

outputs of the Sustainable Cities Project that the Expert Group in the Urban Environment launched in 1993. It represents how the ideas on sustainability have been developed, and how they should be pursued in European settings, as reflected in the: European Commission Green Paper on the Environment, the Treaty on European Union, the Fifth Environmental Action Programme Towards Sustainability, the UN World Earth Summit at Rio, and the series of conferences concluding with Habitat 2.

The European Sustainable Cities Report is concerned with identifying the principles of sustainable development and the mechanisms needed to pursue it, in cities and all levels of the human settlement hierarchy. It focuses on the capacity of local governments ability to deliver sustainability, and it provides a framework for local action, identifying a set of principles to use in setting goals, in evaluating and monitoring progress toward sustainability in urban areas. The Expert group advises the EU Commission on environmental urban policy. Furthermore, the report is also aimed at elected representatives in cities, city managers/administrators and urban environment professionals, who manage sustainability in cities. The successful implementation also depends upon the active involvement of local communities, private and voluntary sector.

3.3.2. The conceptualisation of the sustainable city.

The Expert group claims that sustainable development requires the management of demands. It is concerned with reconciling this with the:
"…aspirations of human societies to develop, progress and improve wealth and living standards".[57]

More specifically on the city, the Expert Group maintains that:

[57] Expert Group on the Urban Environment (1996), Chapter 3. 1,2

"The sustainable city process is about creativity and change. It is about the substance of policy as well as policy methods. It challenges traditional governmental responses and seeks new institutional and organising capacities and relationships. The notion of sustainability is dynamic and evolving and will change over time as understanding of the local and global environment becomes more sophisticated and shared."[58]

Regarding urban sustainability, the Expert Group follows the well-accepted definition of sustainable development set out in the Brundtland report of 1987:
"…development that meets the needs of the present without compromising the ability of future generations to meet their own needs."[59]

They also use a complementary definition that is defined by World Conservation Union, UN Environment Programme and World Wide Fund For Nature in 1991, where the concept means improving the quality of life while living within the carrying capacity of supporting ecosystems.

The Expert Group advocates a broad concept of urban sustainability, broader than environmental protection. The report explores the meanings of sustainability by thinking of the city in ecosystems terms. It is claimed that within cities it is possible to speak of ecology in the literal sense; the plants and animals that live in them. Also, one can conceive of the human ecology of cities - the way cities provide for human needs, wants, and opportunities. Ecology may further be used as a metaphor or model for the social and economic as well as physical processes of cities. Viewing the city as a complex interconnected, and dynamic system consisting of environmental, economic and social factors, the Expert Group understands the city as a living organism. Drawing on the ecosystems metaphor and sustainable development,

[58] Expert Group on the Urban Environment (1996), Epilogue.
[59] WECD (1987) page 43.

principles of integration, co-operation, homeostasis, subsidiary and energy are advocated. Cities perceived as sustainable will be seen as attractive locations for investment as well as pleasant places in which to live and work, being highly resource efficient, but also safe, healthy, pleasant, fulfilling and inspiring places to live.

The challenge of urban sustainability is to solve the problems identifies in the cities themselves, and the problems caused by cities.

3.3.3. Problems identified.

"As we approach the final years of the 20th Century, the increasing urbanisation of the world coupled with global issues of climate change, water shortage, environmental degradation, economic restructuring and social exclusion, demand that we take a deeper look at the future of our cities in Europe."[60]

The Expert Group recognises the problems and challenges that are presented in Agenda 21, the Habitat Agenda and other related UN reports to the sustainability issue. Focusing upon European urban systems, the period since the mid 1980s has witnessed a period of economic recession and population growth in some of the largest cities. Spatial effects of social polarisation appear in some European cities, poor quality neighbourhoods of unemployed people, elderly poor, single young people and minority ethnic groups. These people are more concerned about current personal survival than on global issues. All regions in the EU are intended to benefit from economic growth facilitated by the Single Market, but the Single Market presents challenges to the challenges for sustainability. Too little attention is being paid to the environmental impacts of the increased movement of goods and people.

[60] Expert Group on the Urban Environment (1996), preface.

Poor quality of all aspects of the urban environment is a key concern for city, managers and the public.

3.3.4. Solutions proposed.

The Expert Group argues against the idea that market interaction and market motivated decisions by individuals can be a satisfactory model of how organisations work. This market reductionism fails to deal with social and ecological consequences. Referring to Jane Jacobs, they claim that the “invisible hand” of Adam Smith can just as easily function as an “invisible elbow”. The Expert Group claims that sustainable development will happen only if it is explicitly planned for. Hence, they advocate for the application of system approaches. It should be aimed to formulate, and lead to specific levels of environmental quality, economic growth and social progress.

Inspired by Agenda 21, which specifies a long term framework of control, the Expert Group’s planning approach advocates five main environmental tools: the collaboration of partnership, policy integration, market mechanisms, information management, and measuring and monitoring. A broad and active role of the municipal government is emphasised. All means of modifying or constraining the operation of professions within sustainability objectives should be used. This implies that many problems related to unsustainability are only soluble if people accept limits on their freedoms. The “social contract” model of politics, where individuals agree on collectively limitations on their own actions, may hold the solution to sustainable urban management.

Cities are to be emphasised as complex systems that are characterised by continuous processes of change and development since they are ecological and social living organisms. This results in the principle of ecosystems thinking for urban sustainability

and the dual network approach, consisting of two networks: the hydrological network and the infrastructure network. The infrastructure network has a guiding effect on highly dynamic uses such as business, offices, mass recreation and agriculture. The hydrological network influence less dynamic uses such as water collection, nature and low key recreation. City managers must seek to meet the social, economic and cultural needs of urban residents while respecting local, regional and global natural systems. Hence, cities must transform the linear flow of natural resources into wastes and pollutants into the circular, self-adjusting flows of an ecosystem.

Regarding environmentally sound technologies, the report does not mention any specific suggestions for technological innovation and transfer. However, urban problems such as traffic congestion, odour nuisance and noise can be solved technically by doubling glazing in homes, catalytic converters or electric cars. Other solutions could be to increase road capacity, remove road traffic away from sensitive areas or simply reduce the need to travel.

3.4. Creating a Sustainable London.

3.4.1. The actors involved.

Jane Taylor and the London Citizens Forum suggested to publish Crating a Sustainable London. The SLT is a registered charity run by John Jopling as project manager. The Trust is supported by the Diana Edgson Wright Charitable Trust. The trustees consist of five persons, including John Jopling, the project manager, and Herbert Girardet, the writer of the final text (the Manifesto). Other contributors to the text are researchers, administrators, designers, consultants and many others. The authors claim that the document is a result of the collaboration of hundreds of people,

who are concerned with making London an environmentally, economically and socially sustainable city. They claim to speak on behalf of all Londoners, and they are sure that Londoners feel increasingly uncertain about jobs, housing and pollution, now and in the future.

The document is claimed to be written for almost all the actors in the city such as: elected representatives, city administrators, urban environment professionals and local communities. The LST has numerous organisations, books, reports, articles, magazines, journals and readers comments supporting the statements of their manifesto.[61] The supporters vary from such as Friends of the Earth London groups, Towards Humanity, Greenpeace, the London Business School, the London Planning and Development Forum, the London Chamber of Commerce and Industry, the Royal Institute of British architects, Agenda 21 for London, Earth Summit'92- the Rio Conference and Planetary Connections.

The projects that the SLT supports fall into three categories: those for which SLT is responsible (among them, Creating a Sustainable London); those who projects in which SLT is engaged with other partners; and those who projects run by volunteers where SLT plays a supporting role and which will become part of the London-wide sustainability network that is called London 21. London 21 is also part of a wider network called the UK 21 Sustainability Network, consisting of people in other parts of the country sharing a desire for radical change.[62] The basis for this network is built upon the Local Agenda 21 in London, which is again a result of the initiatives taken by the UN in Rio in 1992.

[61] Sustainable London Trust (1996), appendix.
[62] London Sustainable Network: http://www.london21.org/

3.4.2. The conceptualisation of the sustainable city.

The Sustainable London Trust (SLT) works with the definition:

"…a sustainable city is a city that works so that all its citizens are able to meet their own needs without endangering the well-being of the natural world or the living conditions of other people, now or in the future."[63]

They use this as a working definition, but it is up to Londoners to determine what this means for London. The SLT's definition emphasises people and their needs. These include: good quality air, healthy food, appropriate housing, education, health care, satisfying employment or occupation, safety in public places, supportive relationships, equal opportunities, freedom of expression and special needs of the young, old or disabled people. Furthermore, cities can only be sustainable with considered, efficient use and re-use of resources, and by developing a sustainable relationship with the outside world. The SLT recognise the global dimension of sustainability, accepted at the Rio Earth Summit in 1992, and the similar message coming out of the Habitat 2 conference in 1996 that one needs to respect the carrying capacity of ecosystems and prevention of opportunities for future generations. The concept of sustainable development cannot be concerned merely with environmental factors. Sustainability encourages a holistic overview that offers a pro-active aspiration driven approach to the future of that is an environmentally, economically and socially sustainable city.

About London in particular, the SLT say that the city is magnificent:
"…its cosmopolitan energy, its great buildings and avenues, its lush parks and back gardens and its own local villages are admired throughout the world."[64]

[63] Sustainable London Trust (1996), page 6. http://www.greenchannel.com/slt/intro.htm

However, as the "mother" of mega-cities, it faces several problems.

3.4.3. Problems identified.

About sustainability and cities, the SLT holds that:

"…as we approach the Millennium, humanity faces a profound crisis: Human activities are threatening the very support systems on which our health, even our survival, depends."[65]

Specifically talking about the City of London, it has today fallen behind with regard to the application of the new generation of urban technologies for ensuring efficiency, waste recycling and effective uses of public transport systems. Furthermore, London has serious problems such as poor schools, unemployment, poor housing, homelessness, traffic congestion, high levels of crime, drug abuse, poor public transport and exclusion of minorities. Londoners have no direct say, the current adversarial system does not assist citizens to wishing to become involved in the planning process. On the contrary, it discourages participation. Moreover, the planning minister for London does not follow the London Planning Advisory Committee's excellent advice: to set a holistic agenda for the strategic planning of London, integrating planning, transport and social issues. Further, they complain that no more than a polite nod is paid towards Local Agenda 21 by the planning minister.

Across society the feeling of disillusionment and lack of trust in the future is deepening. Because of these problems, the LST say that some people exhibit anti-social behaviour.

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[64] Sustainable London Trust (1996), introduction
[65] Sustainable London Trust (1996), introduction, page 4

3.4.4. Solutions proposed.

Sustainability must be the organising principle for the problems that the city faces, and a duty to promote sustainable development is crucial. The promotion of sustainable development should be written in the constitution of every public body in London. London has to become a learning city of innovative ideas that reduces its global impact. One must improve the use of resources, integrate transport systems, and invest in ethically oriented enterprises.

Making the city sustainable will require a new strategic London wide authority with appropriate powers and resources; also it needs an active democracy, a bottom-up decision-making and a strong role for the voluntary sector that is elected by proportional representation. They support the idea of a Major for the Greater London Area (that is by now implemented), reporting to a directly elected non-executive assembly. They also propose a London Citizens Forum, so that Londoners can keep sustainable development at the top of the city's agenda through their own channel for monitoring progress towards environmental and social sustainability.
For city planning, London has to reduce the ecological footprint. It has to become a city where circular resource flows reduces its waste products. In order to do that, every Londoner has to make a contribution.

Regarding more concrete solutions for these visions, the ways to turn them into reality are sketched out in Chapter 3, implementation. Here, much focus is upon active communities, committed to action planning that integrate the values, skills and knowledge of local people, architects and technical experts. Strategies for action are to be worked out by these parties lead by multi-disciplinary independent specialists. They should deal with matters such as housing, land use planning, local educational policy,

traffic management, and mega-store development. Local initiatives are essentially sustainable because people have a sense of ownership. Through such 'action planning', consensus can be created, according to the SLT, this is a process that typically takes 3-6 months.

Environmental education linked with London Environmental Education Forum is to be promoted in order to improve peoples understanding of their environment and their ability to act accordingly. School children should also be involved in the discussion, engaged in talking about city planning and the themes in Agenda 21. Other similar actions should also be promoted, as enabling people explore the four pillars of "Art, Education, Health and Environment". Agenda 21 provides the much of the inspiration of what is proposed in this manifesto. Specifically, Agenda 21 offers hope:
"through on going consensus building, attitudes and convictions can change." [66]

A big problem with the London Boroughs is that they have too little sense of identity, Local Agenda 21 processes can help to change this. The SLT refer to the model used by the city of Chattanooga in the USA, where everybody attended to meetings in order to organise all the solutions proposed into a shared vision of the community's future. Making London sustainable demands that Londoners need to shout what best for London.

Implementing a bottom-up approach (regarding city planning and policy making) that is suggested here requires that a London Citizens Forum is created. A Forum that promotes action planing, planning for real, city visioning, open space events and other techniques. This forum should make all the numerable interests in London to co-operate. Participants should work on Local Agenda 21, energy, water, air, food, transport, education and economy.

[66] Sustainable London Trust (1996), implementation, page 7.

4. Analysing the Sustainable City Discourse

4.1. Introduction.

This chapter is concerned with the development of the sustainable city discourse as it has been described above, and to explore the discourse within an ANT framework. Latour maintains that there is nothing better or sturdier than a circumstantial description of networks. Describing or accounting for a network is exactly what an explanation or an ex-plicitation is, and this is what has always been the case in so-called hard sciences, or more exactly 'progressively hardened sciences'.[67] I will provide a network description of the Habitat Agenda, the Sustainable Cities Report and Creating a Sustainable London by showing their relatedness and how the authors build upon each other, and numerous other sources, in order to impose the sustainable city message on others. Related to my research question, the first two sections will show how the idea of the sustainable city is presented and how the authors make an effort to impress this idea on others. Thereafter, the content of the reports will be analysed regarding similarities and differences between them on the subject of city planning and technologies. Also, the way the authors of the reports approach the sustainable city is compared with the notions of the sustainable city in the scholarly literature. Do the documents present any different views on how city policy makers are to act? I wanted to find if the urban problems the authors identified and the solutions they proposed vary across the geographic scales, with special interest to planning and technologies. In order to facilitate the analytic comparison in a structured way, Table 1 summarises the key aspects of each of the three reports reviewed in this thesis.

[67] Latour, B (1997) Page 10

Report/document	UN: The Habitat Agenda	EU: The Sustainable Cities Report	City: Creating a Sustainable London
Authors	Heads of State or government at the UN Habitat 2 Conference.	The Expert Group (38 independent experts and representatives).	SLT, consisting of five persons.
Other actors	Written for: Local. Governments, local. People, NGOs monetary institutions	Written for: the Commission, representative in cities, city managers, and local communities.	Written for: All the actors in the city.
Concept of the Sustainable city	Brundtland def. Of sustainable dev. Social, economical and environmental sustainability. City made to last and in harmony with nature. Economic growth.	Brundtland def. Of sustainable dev. Social, economical and environmental sustainability. Progress, wealth and improved living standards. Economic growth.	Brundland def. Of sustainable dev. Social, economical and environmental sustainability. A growing and learning city. A centre for international finance and a global market place.
Problems identified	Urban crisis regarding unsustainable consumption, production and population.	Water, shortage, climate change, environmental degradation, economic recession and unemployment	Fallen behind with regard to urban technologies, especial transport systems. Inadequate planning. Traffic congestion. Unemployment, crime, drug abuse, and anti-social behaviour.
Solutions Proposed	Empowerment of local people. Participatory and integrated planning of cities. Development & transfer of environmentally sound technologies.	Empowerment, but also limiting peoples freedoms. Using system approaches towards city planing. Information management. City partnership.	A sustainable city constitution. Action planning. Implementing a major of London and London Citizens Forum. Innovative ideas regarding water, transport, energy, traffic, mega-store development. Ethically oriented enterprises.

Table 1: Actors (authors), other actors (those to undertake the actions), concept of the sustainable city, problems identified, and solutions proposed.

4.2. The Concept of the Sustainable City.

In looking at Table 1, we see on all three scales, the definition of the city is the same as the definition set by the Brundland Commission on sustainable development. The focus is upon social, economical and environmental sustainability. For all, economic growth is of great importance, and on the scale of London this is expressed through the notion of an international and a global market place. Here, more clearly than in the other documents, sustainable development can only happen in a liberal capitalistic world emphasising economic growth and free trade, with the city as a global market place. The sustainable city tends towards an extremely anthropocentric understanding. Interestingly, this view contrasts many of the notions of sustainable development and the sustainable city in scholarly literature looked upon. As Vonkeman and Girardet claim, a sustainable lifestyle implies less prosperity in terms of material wealth and consumption. What's more, according to Vonkeman; politicians and decision-makers who put the concept of sustainable development equal with more consumption and economic growth have shied away from the concept's social, political and institutional consequences.

Generally speaking, all three identify the same problems and the ways to solve them: adequate planning and sustainable technologies. The approaches do not change very significantly; all represent similar generic views. However, it goes a bit more concrete when moving to London, where more specific problems and solutions are sketched out.

Out of this we can say that the concept of the sustainable city, and how the authors imagine it, is very similar in all three texts, but as I will show, they have mobilised interests in their texts that have contradicting interests regarding sustainability issues.

4.3. The formation of a network: mobilising actors and actants through inscriptions.

The authors of each of the documents state that the cities of the world have reached a crisis of proportions. This translates the reader to a specific problem-solution, creating sustainable cities becomes the funnel of interests.

With the Habitat Agenda, the authors claim to speak on behalf of actors such as the 185 governments of the UN, the participants of the 1992 Rio conference, other UN agencies, Local Agenda 21, the International Monetary Fund, the World Bank, the Bretton Woods institutions, and other organisations and scientists. Also, entities of actants such as the declaration of the Human Rights, the Brundtland report of 1987 and other reports and scientific articles are mobilised in the texts of the authors. Supported by these actors and actants, the statements of Habitat Agenda are to be imposed on all national governments, local governments, city managers, cities, local communities and businesses around the globe. All these actors are to be enrolled into an actor- world built up in the Habitat Agenda that is what can be termed as an inscription. This inscription, which consists of different entities, supports the idea of sustainable human settlements. The authors behind the Habitat Agenda thus attempt to become a translation centre in an actor-network, in which they seek to control the diverse elements that make it up, and in making these diverse elements to support it. The document is claimed to reflect a global political commitment at the highest level of development co-operation. It promises a decent life for everyone, a life of dignity, happiness, good health and several other good things that build on the UN's ethical and spiritual visions. Furthermore, it renders itself to be indispensable to others by wanting to become a translation centre, intending to guide all efforts to turn the vision of all actors into reality. Currently unsustainable human settlements shall become socially, economically and physically ever lasting by following the advice of the Habitat Agenda.

The Sustainable Cities Report is one of the major outputs of the Sustainable Cities Project in the EU. Written by the Expert Group on the Urban Environment, it enrols the scientific consensus on sustainability, as developed in the UN conferences (i.e. the Rio Conference) that concluded with Habitat 2. It claims to represent how the ideas of the Green Paper on the Environment and the EU programmes towards sustainability are to be developed in the European setting. Furthermore, the group's 38 national representatives also received help from the Directorates General in the EU, and were supported by the Scientific and Technical Secretariat in producing this report. All these actors and actants are mobilised by the Expert Group in this inscription. Hence, the Expert Group presents solutions to the problem of unsustainability, in which it translates sustainable human settlements into sustainable European cities.

The Expert Group recognises sustainable development as defined by the UN as a solution to their problem, namely, poor management of European cities. By enrolling the elected representatives in European cities, city managers and all local communities, the Expert Group demands that we take a deeper look at the future of our cities in Europe. Cities are the ones to carry out the work, but this is only possible if people follow the social contract model as defined by the English philosopher Thomas Hobbes. The people are expected to limit their individual freedom in order to achieve the sustainable city as defined by the Expert Group, who expect the notion of sustainability to become more sophisticated and shared in Europe through time. The Expert Group will find a way in which Europe can develop towards a better or finished state, by improving environmental quality and creating economic growth and social progress that will produce wealth and better living standards.

Sustainable London Trust, the authors behind Creating a Sustainable London are very concerned about the current situation in one specific city, London. They recognise that human activities are causing an environmental crisis that is threatening its the

city's very existence. According to the SLT, Creating a Sustainable London will help to solve this problem. They try to enrol all the actors in the city (heterogeneous entities such as politicians, administrators, city managers, business, NGOs and every Londoner) as they claim to speak on behalf of the city of London. Their aim is to mobilise all actors to act according to a sustainable development constitution, which recognises the political claims taken by the UN conferences on sustainability, in particular the Habitat Agenda. Only this way can consensus be created, one able to cope with matters such as housing, land use planning, education, traffic management, etc. If everybody follows the strategy of the SLT, not only will London become an environmental sustainable and pleasant place to live, but it will strengthen its position as a world centre for the trade and finance that generates economic growth and prosperity for every Londoner.

The claims put forward by the authors of the Habitat Agenda, the Sustainable Cities Report and the Creating a Sustainable London, are thus strengthened by mobilising other actors and actants into the authors' inscriptions. In this manner, it seems as everybody acts as a single whole through these inscriptions, and that consensus on what the sustainable city means is reached. The authors, functioning as translation centres, have extended their discourse through a network of different actors and actants enrolled through conferences, declarations, books, scientific articles, magazines and other texts. The success of these inscriptions lies in the authors' ability to enrol sufficient resources, and that the latter groups accept the picture proposed to them. The Habitat Agenda can be said to represent a higher geographical scale, since it has mobilised more actors and actants than the authors of the other texts have. The authors have simply created a long and extensively connected network of actors and actants through the Habitat Agenda, their inscription. Hence, the global geographic scale, and the actor' perception of urban problems are results of networking. The authors have succeeded in making their declaration relevant for all cities in the world. But is there truly consensus on the meaning of the sustainable city?

4.4. The Sustainable City as a governing paradigm.

In the section above, it is shown that through the mobilising of heterogeneous resources, the authors of the documents have aimed to position themselves as translation centres by which to enforce the idea of making sustainable cities in development policy. Furthermore, the discourse consists of actors and actants, who are involved in network translation in which the authors of the texts try to mobilise other heterogeneous resources. Through this networking, geographic scales are produced and reproduced. These actors and actants are juxtaposed in such a way that it difficult to see any difference between science and politics. But has the idea of the sustainable city become black-boxed, i.e. agreed upon by all actors? Has it become a governing paradigm, compatible with the notions of the sustainable city in scholar literature I described in chapter one? I argue that the notion of the sustainable city has not yet become a black-boxed, but the idea (as a symbol) has certainly become a governing paradigm in the manner that the idea of the sustainable city is fundamentally embedded in city planning and technological development.

4.4.1. On Planning.

Regarding mainstream thinking about sustainable cities in scholarly literature, there are many similarities among the authors about the conceptualisation of the sustainable city and the solutions they proposed. On the definition of sustainable development, Vonkeman, Girardet and Campagni et al can be placed under the type of the Brundtland definition, which is also suggested by the authors of the three documents. Common in all the scholarly literature and documents investigated is the striking similarity with regard to the necessity of appropriate city planning. Everybody agrees

that planning is one of the key tools to address the issues related to unsustainable cities. Yet, how they approach these two issues seem to vary. On planning there is a debate as to what extent local people and stakeholders are to participate in the planning process. On the one hand, Campagni et al argue that planning first and foremost is reserved for professional planning experts. This is also an approach similar to the Expert Group of the EU. On the other hand, Vonkeman, Girardet, and those who advocate integrated assessment maintain the importance of strong local participation. This is also manifested in the SLT document and the Habitat Agenda, both want to promote empowerment of local people.

A tendency among the scholars of sustainability issues, and in the documents I have analysed is one specific approach with regard to city planning. That is to build consensus among people in the city through empowerment and participatory/bottom-up planning. Participatory and bottom-up planning are post-modernist features, which stresses the openness to a range of voices in social enquiry and political empowerment. Postmodernism in general rejects the possibility of a planner that can incorporate all the different interests in society. Since no homogeneity of world-views can be provided for, the traditional modernist ideal of a consensus is questioned. What Lois Albrechts and William Denayer term the post-modern turn in planning theory emphasises that planners must have specialised skills for dealing with 'different truths'.[68] Also, the planners' own perspective of the reality must be put under scrutiny. Here, collaborative planning and empowerment of local people can happen if we strive to promote flexible networks of language games. At the same time, one must criticise games that attempt to increase performance and appropriate power unto themselves. This might be termed an alternative approach to planning and development. This alternative approach is apparent in the documents analysed, where experts are required to listen to local people and work out programmes that highlight

[68] Albrechts and Denayer: *Communicative planning, Emancipatory Politics and Postmodernism.* Pp. 375-377. In Paddison (2001) (ed.)

empowerment. In opposition to this post-modernist approach is the long-standing modernist approach, which is more traditional and positivistic. Here, planners believe they can plan the city in such a way that socially, economically and environmentally problems can be tamed. This is believed to happen through western rational science where modernist ideas on progress and development are emphasised. Also this modernist way of thinking is evident in these documents, as we notice that the authors above everything, stress sustainable cities that are free of socially, economically and environmentally problems. Hence, the two approaches, post-modernism and modernism co-exist in all of the documents analysed.

Thus, paradoxically and despite Hajer's recognition of various groups, interests, incommensurable languages and ideologies, none of the authors behind the documents have left the modernist way of thinking.[69] The concepts of both collaborative planning and rational scientific planning exist side by side, and modernist ways of thinking and post-modern concepts are used in chorus. The planner is supposed to uphold the legacy of optimism and rationalism in order to achieve 'sustainable development', which is the grand narrative. This idea is understood as economically, socially and environmentally sound development, an achievable urban utopia where everybody in the city will live in harmony with each other and nature. Scientists and other experts are the ones to inform the people about consequences of different actions. However, it is the residents who are to decide what is important and what is not regarding sustainability issues.

[69] Latour, B (1993): Bruno Latour and other ANT scholars advocate that we have never been modern, and that there is no such thing as modernity, hence, a modernist way of thinking has never been evident. We do not have time to discuss this problematic in this thesis. I use the terms 'modern' and 'post-modern' when describing what planners and developers call modernist and post-modernist ways to development.

4.4.2 On technology.

Vonkeman distinguishes the technosphere as the fundamental source of global environmental problems. Similar views are represented by Girardet (linear metabolism), and Campagni et al (environmentally adverse technologies). Still, for all of these authors, sustainable technologies are the solution to this problem. Technologies that are produced in order to have less negative effects on the environment must be developed and implemented. The Habitat Agenda and Creating a Sustainable London also look upon sustainable technologies as main instruments of creating the sustainable city, while the Sustainable Cities Report is mostly concerned with planning.

Regarding the ideology of technology, Langdon Winner states that:

"The prevailing ideology of technology in our time, one that has endured for two centuries, bears the name "progress" – the belief that living conditions for the worlds population growth improve through scientific and technological advance as applied in economic development." [70]

According to Winner, this dominant modernist paradigm is still entrenched in the collective consciousness of western industrial societies. However, alternative paradigms do co-exist; many of these hold strong doubts about conventional notions of progress, because of environmental concerns. Some argue that runaway technological change and limitless economic growth expansion are a threat to the life on the planet. Interestingly, we see from the case of the three documents analysed here that the advocates of both modernism, and actors who believe in alternative ways

[70] Winner, Langdon: *Three Paradoxes of the Information Age*. In: Bender, G., Druckerey, T (eds.) (1994)

of thinking are mobilised under the banner of the 'sustainable city'. Modernist and post-modernist views co-exist in these documents.

So, like in the previous section where we found modernist concepts in planning, we have also the modernist idea of scientific progress and technological improvements that will cause the perfect city. But there is more, the documents also give us a technological paradox to cope with. Technology has made us able to exploit natural recourses on a large scale, and 'bad' technologies that have caused environmental depletion have lead to unsustainable development. At the same time technology is supposed to save us, and become an important tool in achieving sustainable development. These 'sustainable' technologies are supposed to increase efficiency with regard to the protection of environmental recourses. Hence, sustainable technologies offer technological alternatives to the "limits to growth". Paul Gray describes this technological paradox when saying that technology is both the source and the remedy of environmental change.[71] A less technological determinist view is put forward by Arnulf Grubler, who claims that technology is an intermediary, rather than a prime cause of environmental change.[72] He says that the design, selection, and application of technology are matters of social choice. For the SLT, the UN and the EU, (and Vonkeman, Girardet and Campagni et al), this social choice is supposed to be managed by city planners. Recognising the limits to our technological lifestyles, our technological culture is supposed to change towards a sustainable one. John Lyle emphasises that sustainability depends on environmental design, it implies that the use of renewable resources, and sustainable technologies must be incorporated into the landscape.[73]

[71] Gray, P. E: *The Paradox of technological development*. In: Ausubel. J. H, and Sladovich. H. E (eds.) (1989), pp. 192-204.
[72] Grubler. A (1998), pp.342
[73] Lyle. J (1985)

So perhaps it is not just the “technosphere” that is the problem of unsustainability, as Vonkeman claims, but also the “social sphere”. Furthermore, the distinction between the two spheres becomes blurred and diffuse if we agree with Latour and other ANT scholars, who claim that everything happens in heterogeneous networks, which consist of actors (i.e. human innovators) and actants (i.e. machines). As mentioned, all have some sort of agency. Here, one does not use terms as ‘technology’, ‘society’ or ‘culture’ to explain phenomena. Instead, one strives to put in plain words what these phenomena are by the work done by actors in heterogeneous networks.

4.5. The sustainable city, an adaptive concept.

At this point, we can state that there is widespread scientific and political consensus that sustainable cities must be created. However, I suggest that the success of this concept is the result of letting actors interpret and define it as it suits them. Latour states that:

"The simplest way to spread a statement is to leave a margin of negotiation to each of the actors to transform it as he or she sees fit and to adopt it to local circumstances. Then it will be easier to interest more people in the claim since less control is exercised on them. Thus, a statement will go from mouth to ear." [74]

This is what Latour characterises as a 'soft fact'. A Statement, the meaning of which is open to negotiation has the potential to interest many people, since it can very easily adapt to local circumstances, hence it travels (in terms of translation) more easily through time and space. It is suggested here that this also goes for 'sustainable development', and the idea of the 'sustainable city'. During network negotiation, the sustainable city has gained consensus among different players with extremely contradicting interests. These include, just pointing out a few: the IMF, WB, UN, EU, London Sustainable Trust, Local Agenda 21, Greenpeace, Friends of the Earth and all the "local people" on our planet. The 'sustainable city' as a meta-narrative, has the unique ability to unify these diverse groups. However, it is not very probable that all these interest groups have a similar interpretation of this symbolic, as symbols are always multi-interpretable, and function as umbrellas. The authors have tried to incorporate the different narratives their inscriptions. Hajer and other discourse analysts have shown us that the meaning of sustainable development is relative among

[74] Latour, B (1987) Page 208

different groups, and that we do not share the understanding of the environment the same way as we "share the globe".[75]

The authors of the three texts described here have given us the opportunity to apply the term 'sustainable city' in more or less every statement that can be associated with a good society. They let the concept of the sustainable city remain extremely vague, it contains ideas such as: visions for natural protection, harmony with nature, peace, democracy, local participation, professional management, a state of duration through generations, economic growth and improved living standards. As I will argue, this is exactly the strength (and the "softness") of the very idea of the sustainable city.

According to Latour, however, there is a price to pay for such a solution.[76] As the 'sustainable city' becomes negotiated, incorporated and adopted, everyone can transform it. In addition, since the 'sustainable city' can have as many authors as there are actors along the chain of translation, nobody owns this idea. This has a consequence that is the price to pay: the 'sustainable city' will not become a hard fact, because there are too many interpretations and definitions. On the other hand, this is exactly the explanation why the idea has gained such a widespread consensus. The narrative of the sustainable city provides actors with symbolic references, which suggest a universal understanding of the reality. Different actors, who often conflict on many issues, gather around the same story lines. They all want 'sustainable cities'. Since the idea is multi-interpretable, it can avoid the clashing of contradicting interests. Hence, the most eco-centric notion on creating sustainable cities can co-exist side by side under the identical symbolic, in the same report with anthropocentric ones. It is still a 'sustainable city' that becomes the symbol of the good society and the answer of all our problems. In other words, the idea and the concept of the sustainable city is very adaptive.

[75] Hajer, M.A (1995), pp. 1-15
[76] Latour, B (1987), pp. 205-210

The authors offer us a sustainable city of many translative possibilities, and the idea is enforced through the mobilising heterogeneous resources, thus gaining consensus. This is exactly the strength of the idea. But in doing so, there is a tendency that the authors are simply restating policy principles that were used before the term sustainability came into general use. Progress in terms of wealth, natural protection, improved living standards and economic growth are long-established and traditional modernistic routes of development, that are by many described as contradictory and conflicting with the "real meaning" of sustainability.[77] Despite this, and as shown in the three documents analysed here, economic growth and the overall aim of sustaining the city as a continuing growth machine is very likely to be circulated under the flag of sustainability.

The notion of the sustainable city has been made translatable, from the UN to the EU and all the way to London by travelling in inscriptions through this network. The sustainable city is produced, and reproduced in the discourse by actors (i.e. authors and politicians at conferences), and actants (i.e. reports and manifestos) as it travels in terms of translation from global treaty obligations to EU planning polices to European cities. As a result, the idea of the sustainable city is made legitimate and necessary for all cities, and it encompasses all aspects of city policy, city planning, and the types of technologies that should be in the city. These inscriptions tell us how cities are to be built, hence, as actants they have some sort of agency. Sustainability is used to justify city planning and policy, since the very aim of development is to accomplish a sustainable city, understood as an indispensable and universal ethical value. In fact, this universal value denies other "non-universal" views the right to exist. It can even decide what and how the people in the city should think and behave:

[77] Daly, H.E (1999)

"If current life-styles and sustainability are in conflict, people will have to learn how to think differently." [78]

Similar to the statement above, the London Sustainable Trust, school children are supposed to be educated within sustainability issues.[79] The 'sustainable city' can signify almost any city in a state of duration, and no one can resist it. In the reports and policy documents described, the authors have mobilised such a vast amount of source material from science and politics, from almost surreal coalitions of left wing environmentalists, nature conservationists and a variety of different governmental development agencies. Not only are we assured that an ever-lasting city will manifest itself by following the advice of these authors, we are also promised progress, increased wealth, improved living standards, economic growth and a future where cities are developed in harmony with nature. The city must be made to last forever, and for that reason, all entities that can make the city last must have the priority to continue. These are environmentally sound technologies, city planning and economic growth.

The very idea of the sustainable city is the same in all of the texts: it can mean almost anything from peace and harmony with nature to technological development, economic growth and global trade. Accordingly, the need for sustainable cities has become the universal governing paradigm on all geographic scales that are constructed through building networks in these inscriptions.

Therefore, we can agree with Robert A. Beauregard, who argues that the masses of texts are capable of creating a reality for urban populations.[80] By the discourse analysis applied in this thesis, we find that actants such as textbooks, articles, reports, political manifestos etc. are actively constructing images of how cities are to be built,

[78] Hall, P (1994) in OECD, Paris: *Cities for the Twenty-first Century*. Page 43.
[79] Sustainable London Trust (1996), implementation, page 6
[80] Beauregard, R.A (1993).

and furthermore that through the discourse, the authors convey how we are to act in a practical way. Once again, actants such as texts and other non-humans have some sort of agency.

As explained in chapter two (referring to Callon), I assumed that we should start with a clean slate and not assume differences that are based upon geographic scales. In this way we can be able to see how geographic scales are constructed, as well as explaining if and why there are differences. The authors of the Habitat Agenda have mobilised masses of actors and actants in their inscription in such a way that they can claim to represent the whole world. Therefore they can be said to represent the global geographic scale. The work done on this scale has influenced and shaped other networks, such as the EU (regional scale) and London (local scale). The work done by these actors also constructs these scales, where the authors of these inscriptions function as translation centres on different geographic scales. By mobilising actors through inscriptions, the paradigm of the sustainable city has become settled and stabilised through the work done by actors (the authors) in networks, representing different geographic scales. Because the authors of the three documents draw upon, and mobilise the same scientific theories and political arguments, the rhetoric of the authors appears very similar. Hence, conceptualisation, problems identified and solutions proposed do not vary across geographic scales. The idea of the sustainable city remains profoundly similar across geographic scales and the idea, as a symbol is able to gather and contain different actors of clashing interests.

5. Conclusion

5.1. The research findings.

Is the idea and the conceptualisation of the sustainable city represented differently by different agencies? Why or why not? What are the problems they identify and the solutions they propose regarding city planning and sustainable technologies? Do these change across different geographic scales?

My starting point was to investigate whether the idea and the conceptualisation of the sustainable city is represented differently by different agencies. Also, I stated that any differences or similarities had to be explained and accounted for. In order to achieve this, a discourse analysis within the framework of an actor-network theory was selected because of its ability to explain how facts, theories, ideas and machines are translated and adopted. This is in opposition to the notion that they are diffused simply because of their own inertia. Furthermore, I wanted to put a special focus upon the authors' solutions to achieve sustainable cities, especially on planning and sustainable technologies, and to see whether these changed across geographic scales. For data material, I selected three documents, written by authors who represented respectively: the UN, the EU and the LST, each of great political importance.

Regarding the idea of the sustainable city in these documents, it is explained in a way that it presents an answer to nearly all our present urban problems. If we follow the advice of the authors, we will achieve sustainable cities that promise economic growth, wealth and improved living standards. On top of this we will progress socially, economically, and scientifically trough time in harmony with nature. What is

more, the idea is made legitimate and all encompassing for city policy making by the work done by the authors of the documents. They have the solutions to our problems, and work to interest, enrol and mobilise actors and actants into their texts. I have called these texts inscriptions, because they are written as if they objectively represent nearly all the interests in the world. The authors function as translation centres in the networks in which they make a huge amount of other actors and actants to support their claims. The authors of these inscriptions have legitimised their sustainable city by drawing upon actants such as scientific literature from books, articles and reports.

The idea of the sustainable city and the solutions to approach it is represented more or less in the same way by all agencies I have investigated. This approach represents a governing paradigm of contemporary sustainable city debate. How the authors of the Habitat Agenda, the Sustainable Cities Report and Creating a Sustainable London approach the sustainable city regarding planning and sustainable technologies, is the same on all three scales. Also, the way they cope with sustainability corresponds to notions of the sustainable city in the scholarly literature. On the topic of geographic scales, the paradigm of the sustainable city has become settled and stabilised through the work done by actors (the authors) in networks. This work also constructed the inscriptions that might be said to represent different geographic scales. The Habitat Agenda represents the global scale, because of the long and extensively connected network the authors have managed to mobilise through their inscription. The regional scale is represented by the EU, which through the Expert Group has demonstrated how sustainable cities are supposed to be understood and implemented in European settings. The authors of Creating a Sustainable London represent the local scale. They have not mobilised that many resources as the UN and the Expert Group; hence, they address just one city. All these authors belong in the discourse of sustainable cities, and in this discourse, the idea of the sustainable city is a symbol, multi- interpretable on all geographic scales. But there is more, in this sustainable city paradigm there exist a few interesting paradoxes.

For planning, we see that notions of collaborative bottom up planning, where the empowerment of local people is supposed to be promoted is apparent in all three documents. This can be termed a post-modern approach, which turns away from the modernist belief that a rational planner can incorporate and represent all the voices and interests in the city. At the same time, a modernist route towards city development and planning is emphasised. Through these documents scientists and planners are the ones who define the problems and the goals of cities. In this modernist approach, planners find it possible to identify problems and propose sufficient solutions that, if implemented in the right manner, support desirable development. They believe that it is possible to realise sustainable development if the suggested solutions are carried out. Thus, modernist and post-modern approaches are advocated simultaneously in the same documents by the authors.

As for technologies, the authors point to these as main instruments in creating sustainable cities. At the same time, they identify technologies and the technosphere as the main cause of unsustainable cities because of how it has allowed us to develop in the past. Once again we face a paradox. Through scientific and technological improvements we can have a city where sustainable development goes beyond the "the limits to growth". With this sustainable technological development comes growing and learning global cities where trade can flourish in a 'sustainable' direction.

Through the Habitat Agenda, the Sustainable Cities Report and Creating a Sustainable London, scientific facts and political conventions are promoted by the authors' ability to mobilise many heterogeneous resources. The idea of the sustainable city is enforced in this process and other explanations to urban problems and solutions to them are rejected. Through this discourse, the authors have constructed a reality, and in this reality we are to behave in a certain way. In particular, we have to endorse the idea of

the sustainable city that develops towards peace, social justice, stability, natural harmony and economic growth. If we follow the advice of the authors, we will come up with an urban utopia. However, as Focault and other discourse analysts have argued, language is rarely innocent since it shapes peoples identities and attitudes. The work done by the authors who, enrol, interest and mobilise is immense. Through this discourse, they aim to combat alternative accounts of the reality of cities, the problems they face and the solutions that are needed. Hence, the idea of the sustainable city does not diffuse because of its own inertia, but it is translated in the way the authors enrol others. This shapes our realities and our perception of the how the sustainable city should be manifested.

The success of the idea of the sustainable city relies upon its potential to interest many different people. Although the concept of the sustainable city is related to the definition of sustainable development as defined by the Brundtland Commission, the very idea remains vague and translative. Thus, the idea is a symbol that can be a container of often contradicting interests and views that agree under the symbol of the 'sustainable city'. The concept of the sustainable city as a consequence becomes an adaptive concept that is easy to use by many actors.

The documents analysed present plans for general action towards 'sustainable cities' by addressing governmental institutions, NGO's, the industry, local people, scientists and city planners. The 'sustainable city' has become an unquestioned planning ideology in the United Nations and in the European Union. For Hall and, and those who are inspired by what is termed orthodox policy analysis (Vonkeman, Girardet, and Campagni et al), the 'sustainable city' is mostly taken for granted. The true and objective state of the city, and the problems it face imply objective policy options. This denies other non-universal views on the city to exist. It is impossible to oppose the idea of the sustainable city in public discourse, since all actors and actants in the discourse are mobilised in that direction. Not only are texts mobilised, but also

conferences, scientists, education programmes and courses for the promotion sustainable cities. At present, the governing paradigm of the sustainable city hinders other non-universal values the right to exist; nobody can oppose or resist the idea of the sustainable city in contemporary political debates, notwithstanding its definition. Hence, we can agree with Boyle and Rogerson that the ways of seeing cities assumed in policies and that ways of seeing always derive from and underlying position of power.[81] On the subject of the sustainable city discourse, this power is a result of some actors' work through networking.

5.2. Suggestions for further research.

As the UN Summit in Johannesburg 2002 approaches, important issues on sustainability will be debated; also among these is the sustainable city.
In the thesis presented, the discourse analysis of the sustainable city discourse has treated mainly texts written by three agencies. However, the findings pose some interesting questions regarding the factual implementation of the sustainable city, as carried out in one specific city, i.e. London.

One question is related to the meaning of the sustainable city. Here, city policy makers and non-governmental organisations in the city might have different interpretations of the sustainable city. If this is so, which factors decide what sort of interpretation is going to be used in the implementation of the sustainable city? How do actors strive to mobilise resources in order to legitimate their view of the sustainable city? Do any actors question, or oppose the very idea of the sustainable city? If not, could that be linked to the work done by the advocates of the sustainable city?

[81] Boyle, M., Rogerson, R.J: *Power, Discourse and Trajectories.* In: Paddison. R (2001), page 414.

Another question is on the subject of city planning and sustainable technologies. Here, investigating specific projects on the topic of sustainability of one specific city would be interesting. What sort of instruments and approaches are applied in city planning, and which technological solutions to unsustainability are given?

Finally, the findings of this proposed research should be compared to the policy statements of the United Nations, particularly the Habitat Agenda, to see whether they are in tune.

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